

10/578990

AP2006050770 11 MAY 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR UNITED STATES UTILITY PATENT

APPARATUS AND METHOD FOR HANDLING PIPE

EXTRA SET CLAIMS - 38-70 - FOR PTO EXAMINER

INVENTORS

LEON SONNEVELD
ANTON KRIJNEN
BOB DEPONT
MIKE SCHATS
KEES DELAAT
HANS VAN RIJZINGEN

10/578990 11 MAY 2006

CLAIMS:

1 38. (new) An apparatus for handling pipes, the apparatus
2 comprising

3 a body having a tapered surface and at least a first
4 slip and a second slip slidable on the tapered surface,

5 a slip actuator for setting said at least said first
6 slip and said second slip,

7 said first slip and said second slip having
8 interengaging elements therebetween such that upon actuation
9 of said slip actuator, said first slip is set and said second
10 slip is set by the interengaging elements transferring the
11 setting force from the slip actuator through said first slip
12 to said second slip.

1 39. (new) The apparatus as claimed in Claim 38 wherein the
2 interengaging elements comprise an upstand and a recess.

1 40. (new) The apparatus as claimed in Claim 38 wherein said
2 first and second slips each has a pipe engaging surface, a top, a
3 bottom, a rear face and two sides.

1 41. (new) The apparatus as claimed in Claim 40 wherein said
2 interengaging elements are located on or in at least one of said
3 sides.

1 42. (new) The apparatus as claimed in Claim 41 wherein the
2 rear face slides along said tapered surface of said body.

1 43. (new) The apparatus as claimed in Claim 38, wherein said
2 slip actuator sets said at least first and second slips by moving
3 the at least first and second slips down said tapered surface,
4 wherein the interengaging elements allow lateral movement between
5 the first and second slip.

1 44. (new) The apparatus as claimed in Claim 38, wherein the
2 tapered surface comprises at least two tapered surfaces.

1 45. (new) The apparatus as claimed in Claim 38, wherein the
2 tapered surface takes the form of a frusto-conical surface.

1 46. (new) The apparatus as claimed in Claim 45 wherein the
2 frusto-conical surface is located on a main body and two doors.

1 47. (new) The apparatus as claimed in Claim 46 wherein one of

2 said doors comprises a latch and the other of said doors comprises
3 a catch.

1 48. (new) The apparatus as claimed in Claim 47 wherein the
2 main body subtends substantially one hundred and eighty degrees and
3 each of the doors subtends between seventy-five and ninety degrees.

1 49. (new) The apparatus as claimed in Claim 46 wherein said
2 first slip is located on the tapered surface of said main body and
3 said second slip is located on the tapered surface of one of said
4 doors.

1 50. (new) The apparatus as claimed in Claim 38 further
2 comprising

3 a third slip and a fourth slip slidable on said
4 tapered surface,

5 said apparatus further comprising a further slip
6 actuator for setting said at least third slip and said fourth
7 slip,

8 wherein said third slip and said fourth slip have
9 interengaging elements therebetween such that upon actuation
10 of said slip actuator,

11 said third slip is set and said fourth slip is set
12 by the interengaging elements transferring the setting force
13 from the slip actuator through said third slip to said fourth
14 slip.

1 51. (new) The apparatus as claimed in Claim 38 wherein said
2 slip actuator is hydraulically actuatable.

1 52. (new) A method for setting slips in an apparatus for
2 handling pipes, the apparatus for handling pipes comprising a body
3 having a tapered surface and at least a first slip and a second
4 slip slidable on the tapered surface, the apparatus further
5 comprising a slip actuator for setting said at least said first
6 slip and said second slip characterised in that said first slip and
7 said second slip have interengaging elements therebetween such
8 that upon actuation of said slip actuator, said first slip is set
9 and said second slip is set by the interengaging elements
10 transferring the setting force from the slip actuator through said

11 first slip to said second slip, the method comprising the steps of
12 operating the slips actuating mechanism to apply a
13 setting force to the first slip, whereupon the interengagement
14 transfer elements the setting force to the
15 second slip,
16 setting the first and second slips simultaneously.

1 53. (new) An apparatus for handling pipes, the apparatus
2 comprising

3 a body with a tapered surface,
4 a recess in the tapered surface and a pin arranged
5 therein,

6 the apparatus further comprising a slip slideable on
7 the tapered surface, wherein the slip has a lug slideable on
8 said pin, said slip biased by resilient means between said
9 body and said lug to bias said slip into an unset position.

1 54. (new) An apparatus as claimed in any of Claim 53 further
2 comprising

3 a shoulder arranged in the path of action of the
4 resilient means to inhibit clamping of said slip lug between
5 said resilient means and said body.

1 55. (new) The apparatus as claimed in any of Claims 53
2 further comprising

3 a sleeve about a portion of said pin close to the
4 slip lug,

5 wherein said resilient means surrounds said sleeve.

1 56. (new) The apparatus as claimed in Claim 54 wherein said
2 sleeve is fixed to said shoulder.

1 57. (new) An apparatus as claimed in Claims 53 wherein said
2 body further comprises

3 a body lug,

4 said resilient means biased between said lug slip of
5 said slip and said body lug of said body.

1 58. (new) The apparatus as claimed in Claim 57 wherein said
2 slip comprises a secondary lug arranged below said body lug of the
3 body.

1 59. (new) The apparatus as claimed in Claim 53 wherein said
2 body comprises a ledge against which said slip lug of said slip is
3 biased.

1 60. (new) The apparatus as claimed in Claim 53 wherein said
2 resilient means comprises at least one of the following: pneumatic
3 piston and cylinder, hydraulic piston and cylinder and an
4 accumulator, a coiled spring, Belleville washers, resilient material
5 such as a foam, and a compression spring.

1 61. (new) A method of changing a slip in an apparatus for
2 handling pipes using the apparatus, the apparatus for handling pipe
3 comprising a body with a tapered surface, a recess in the tapered
4 surface and a pin arranged therein, the apparatus further
5 comprising a slip slideable on the tapered surface, wherein the
6 slip has a lug slideable on said pin, said slip biased by resilient
7 means between said body and said lug to bias said slip into an
8 unset position, the method comprising the steps of

9 removing the pin from the body, and

10 moving said slip to slide the slip lug thereof out
11 of the recess in the body of the apparatus.

1 62. (new) A method for indicating slips of an elevator have
2 engaged a pipe, the elevator having a slip actuator for actuating
3 slips to engage a pipe, the slip actuator comprising a
4 hydraulically operated piston and cylinder, the method comprising
5 the steps of

6 applying pressurised hydraulic fluid to the piston
7 in the piston and cylinder to move the piston to move the
8 slips into engagement with a pipe,

9 the piston passing a signal port, upon which
10 pressurized hydraulic fluid communicates with hydraulic fluid
11 in a line connected to the signal port, which indicates to a
12 controller that the slips are actuated.

1 63. (new) The method in accordance with claim 62 wherein the
2 elevator further comprises a door and a latch, the door operated by
3 a hydraulic piston and cylinder, the piston and cylinder having a
4 signal port, the method further comprising the step of

5 applying hydraulic fluid under pressure to the
6 piston and cylinder to move the piston to close the door,
7 whereupon the piston passes the signal port,
8 whereupon hydraulic fluid in a line connected to the signal
9 port is pressurised to initiate activation of the latch.

1 64. (new) The method in accordance with claim 63 wherein the
2 elevator further comprises a hydraulic switch, actuatable upon the
3 latch assuming a closed position, which switch allows hydraulic
4 fluid under pressure to flow therethrough to initiate activation of
5 the slips actuator.

1 65. (new) The method for handling pipe using an elevator
2 having a hydraulic slip actuator for activating slips for engaging
3 a pipe, wherein the elevator further comprises a pilot line, the
4 method comprising the step of

5 applying pressurized hydraulic fluid to the pilot
6 line to activate the slips actuator to disengage the slips.

1 66. (new) An apparatus for handling pipes, the apparatus
2 comprising

3 a body,

4 at least one door and a hydraulic slip actuator for
5 activating at least one slip characterised in that said
6 apparatus further comprises

7 a pilot line and a valve for directing flow of
8 hydraulic fluid into said slip actuator to activate the
9 slips actuator to disengage the slips.

1 67. (new) An apparatus for handling pipes, the apparatus
2 comprising

3 an elevator having a body,

4 at least one ear,

5 a slip actuator for engaging slips with a pipe,

6 a stator attachable to bails of a top drive, and

7 a rotor attached to said at least one ear and drive
8 apparatus for rotating said rotor for tilting said elevator
9 with respect to the stator.

1 68. (new) The apparatus as claimed in Claim 67 wherein the

2 elevator further comprises at least one door.

1 69. (new) A method for handling flush or near flush pipe
2 using an elevator depending from bails of a top drive, the elevator
3 having body and at least one door defining a throat, slips located
4 in the throat and a slip actuator, the method comprising the steps
5 of

6 opening the at least one door of the elevator,
7 tilting the elevator with respect to the bails,
8 placing pipe in a throat of the elevator,
9 closing the doors and activating slips to engage the

10 pipe, and

11 hoisting the elevator to allow the elevator to
12 assume its initial position with a pipe depending therefrom.

1 70. (new) The method in accordance with Claim 69 the elevator
2 further comprising a hydraulically actuatable piston and cylinder for
3 facilitating opening of the door, wherein the method further
4 comprises the steps of

5 opening the doors by raising hydraulic pressure in
6 said actuator, the piston passing a signal port,

7 whereupon a signal is sent which initiates a safety
8 valve which allows the elevator to be tilted.